

PRELIMINARY DRAFT

LPDES PERMIT NO. LA0003824, AI No. 1244

LPDES FACT SHEET and RATIONALE
FOR THE DRAFT LOUISIANA POLLUTANT DISCHARGE ELIMINATION SYSTEM
(LPDES) PERMIT TO DISCHARGE TO WATERS OF LOUISIANA

- I. Company/Facility Name: Firestone Polymers, LLC
Lake Charles Facility
Post Office Box 1361
Lake Charles, Louisiana 70602
- II. Issuing Office: Louisiana Department of Environmental Quality
(LDEQ)
Office of Environmental Services
Post Office Box 4313
Baton Rouge, Louisiana 70821-4313
- III. Prepared By: Christy Clark
Industrial Permits Section
Water Permits Division
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Date Prepared: January 21, 2011

IV. Permit Action/Status:

A. Reason For Permit Action:

Proposed reissuance of a Louisiana Pollutant Discharge Elimination System (LPDES) permit for a 5-year term following regulations promulgated at LAC 33:IX.2711/40 CFR 122.46.

LAC 33:IX Citations: Unless otherwise stated, citations to LAC 33:IX refer to promulgated regulations listed at Louisiana Administrative Code, Title 33, Part IX.

40 CFR Citations: Unless otherwise stated, citations to 40 CFR refer to promulgated regulations listed at Title 40, Code of Federal Regulations in accordance with the dates specified at LAC 33:IX.2301, 4901, and 4903.

- B. NPDES permit - NPDES permit effective date: N/A
NPDES permit expiration date: N/A

EPA has not retained enforcement authority.

- C. LPDES permit - LPDES permit effective date: July 1, 2006
LPDES permit expiration date: June 30, 2011

- D. Application received on December 29, 2010. Additional information received via mail on February 23, 2011 and via email on April 15, 2011 and May 2, 2011.

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V. Facility Information:

A. Location - 1801 Louisiana Highway 108 East in Sulphur, Calcasieu Parish

B. Applicant Activity -

According to the application, Firestone Polymers, LLC, Lake Charles Facility is a synthetic rubber manufacturing facility that produces multiple grades of rubber by the solution polymerization process. After polymerization, the rubber is separated from solvent through a water/steam stripping operation whereby the solvent is recycled and purified, the crumb product is dried. The facility operates 24 hours per day, year round, except during scheduled shutdowns.

C. Technology Basis - (40 CFR Chapter 1, Subchapter N/Parts 401 and 405-471 have been adopted by reference at LAC 33:IX.4903)

Guideline

Solution Crumb Rubber

Reference

40 CFR 428, Subpart C,
Sections 428.32 and 428.33

Other sources of technology based limits:

LDEQ Stormwater Guidance, letter dated 6/17/87, from J. Dale Givens (LDEQ) to Myron Knudson (EPA Region 6)

Best Professional Judgment

Current LPDES permit, effective July 1, 2006

D. Fee Rate -

1. Fee Rating Facility Type: major
2. Complexity Type: V
3. Wastewater Type: II
4. SIC code: 2822

E. Continuous Facility Effluent Flow - 1.44 MGD

VI. Receiving Waters: Calcasieu River via Bayou D'Inde

1. TSS (15%), mg/L: 11.38
2. Average Hardness, mg/L CaCO₃: 400
3. Critical Flow, cfs: 34.4
4. Mixing Zone Fraction: 1
5. Harmonic Mean Flow, cfs: 103.2
6. River Basin: Calcasieu, Subsegment No. 030901
7. Designated Uses:

The designated uses are primary contact recreation, secondary contact recreation, and fish and wildlife propagation.

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Information based on the following: LAC 33:IX Chapter 11. Hardness and 15% TSS data come from monitoring station #0848 (Bayou D'Inde at the bridge on Highway 108, one mile south of I-10 exit #24, 5.4 miles west of Lake Charles, and 4.1 miles northeast of Carlyss) listed in Hardness and TSS Data for All LDEQ Ambient Stations for the Period of Record as of March 1998, LeBlanc and a Memorandum from Todd Franklin to Christy Clark dated January 27, 2010 (See Appendix B).

VII. Outfall Information:

Outfall 001

- A. Type of wastewater - the continuous discharge of treated process wastewater, process area stormwater, first-flush non-process area stormwater, and treated sanitary wastewater
- B. Location - at the point where the final effluent leaves the wastewater treatment facilities, prior to commingling with stormwater Outfalls 003 and 004
(Latitude 30°11'27", Longitude 93°20'02")
- C. Treatment - treatment of process wastewaters and first-flush non-process area stormwater runoff consists of:
 - neutralization
 - biological oxidation (aerated lagoon)
 - flocculation
 - clarification
 - dissolved air flotationtreatment of sanitary wastewaters consists of:
 - Imhoff tank
 - chlorination
 - process wastewater treatment system
- D. Flow - Continuous, (Max 30-Day) 1.44 MGD
- E. Receiving waters - Calcasieu River via Bayou D'Inde
- F. Basin and subsegment - Calcasieu River Basin, Subsegment No. 030901

Outfall 003

- A. Type of wastewater - the intermittent discharge of non-process area stormwater from the west side of the facility and the intermittent discharge of miscellaneous allowable non-stormwater discharges including but not limited to fire water, potable water, condensate, general facility washwaters (without soaps), irrigation water, eye wash and safety shower waters, and ground water/well water

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- B. Location - at the point of discharge from the overflow of the diversion dam in the west stormwater ditch, prior to commingling with other wastewaters
(Latitude 30°11'24", Longitude 93°20'02")
- C. Treatment - none
- D. Flow - Intermittent, (Max 30-Day) 24.96 MGD
- E. Receiving waters - Calcasieu River via Bayou D'Inde
- F. Basin and subsegment - Calcasieu River Basin, Subsegment No. 030901

Outfall 004

- A. Type of wastewater - the intermittent discharge of non-process area stormwater from the east side of the facility and the intermittent discharge of miscellaneous allowable non-stormwater discharges including but not limited to fire water, potable water, condensate, general facility washwaters (without soaps), irrigation water, eye wash and safety shower waters, and ground water/well water
- B. Location - at the point of discharge from the overflow of the diversion dam in the west stormwater ditch, prior to commingling with other wastewaters
(Latitude 30°11'27", Longitude 93°20'00")
- C. Treatment - none
- D. Flow - Intermittent, (Max 30-Day) 43.61 MGD
- E. Receiving waters - Calcasieu River via Bayou D'Inde
- F. Basin and subsegment - Calcasieu River Basin, Subsegment No. 030901

VIII. Proposed Permit Limits:

The specific effluent limitations and/or conditions will be found in the draft permit. Development and calculation of permit limits are detailed in the Permit Limit Rationale section below.

Summary of Proposed Changes From the Current LPDES Permit:

- A. Part II, Paragraph K - Minimum quantification levels (MQLs) for state water quality numerical standards-based effluent limitations have been set at the values listed in the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, October 7, 2009. The site specific MQLs included in the current LPDES permit for Total Copper and Total Mercury are no

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longer applicable since the updated MQLs are less than the site specific MQLs previously established.

- B. The permittee's request for language to be included in the reissued permit to account for the potential failure of the facility's continuous flow monitoring has been granted. See Part II.H of the permit.
- C. The permittee's request for language to be included in the reissued permit to account for the potential failure of the facility's continuous pH monitoring has been granted. See Part II.J of the permit.
- D. The permittee's request for language to be included in the reissued permit to account for potential failure of the facility's continuous temperature monitoring has been denied. In accordance with Part III.Section B.3.a, back-up provisions are required.
- E. Outfall 001 - Due to an increase in production from 1,289,000 lbs/day to 1,304,000 lbs/day the daily maximum and monthly average limitations for TSS and Oil & Grease have increased from the current LPDES permit. The permittee's request for monitoring frequency reductions of Oil & Grease and TSS has been granted. The monitoring frequencies for Oil & Grease and TSS have been reduced to 1/week based on BPJ.
- F. Outfall 001 - Due to the number of excursions for BOD₅, the monitoring frequency has been increased from 3/week to 4/week.
- G. Outfalls 003 and 004 - The facility has identified new wastestreams. As a result, miscellaneous allowable non-stormwater discharges including but not limited to fire water, potable water, condensate, general facility washwaters (without soaps), irrigation water, eye wash and safety shower waters, and ground water/well water have been added to the outfall descriptions.

IX. Permit Limit Rationale:

The following section sets forth the principal facts and the significant factual, legal, methodological, and policy questions considered in preparing the draft permit. Also set forth are any calculations or other explanations of the derivation of specific effluent limitations and conditions, including a citation to the applicable effluent limitation guideline or performance standard provisions as required under IAC 33:IX.2707/40 CFR Part 122.44 and reasons why they are applicable or an explanation of how the alternate effluent limitations were developed.

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A. TECHNOLOGY-BASED VERSUS WATER QUALITY STANDARDS-BASED EFFLUENT LIMITATIONS AND CONDITIONS

Following regulations promulgated at LAC 33:IX.2707.L.2.b/40 CFR Part 122.44(l)(2)(ii), the draft permit limits are based on either technology-based effluent limits pursuant to LAC 33:IX.2707.A/40 CFR Part 122.44(a) or on State water quality standards and requirements pursuant to LAC 33:IX.2707.D/40 CFR Part 122.44(d), whichever are more stringent.

B. TECHNOLOGY-BASED EFFLUENT LIMITATIONS, CONDITIONS, AND MONITORING REQUIREMENTS

Regulations promulgated at LAC 33:IX.2707.A/40 CFR Part 122.44(a) require technology-based effluent limitations to be placed in LPDES permits based on effluent limitations guidelines where applicable, on BPJ (best professional judgment) in the absence of guidelines, or on a combination of the two. The following is a rationale for types of wastewaters. See outfall information descriptions for associated outfall(s) in Section VII. Regulations also require permits to establish monitoring requirements to yield data representative of the monitored activity [LAC 33:IX.2715/40 CFR 122.48(b)] and to assure compliance with permit limitations [LAC 33:IX.2707.I./40 CFR 122.44(i)].

1. Outfall 001 - the continuous discharge of treated process wastewater, process area stormwater, first-flush non-process area stormwater, and treated sanitary wastewater

Firestone Polymers, LLC, Lake Charles Facility is subject to Best Practicable Control Technology Currently Available (BPT) and Best Available Technology Economically Achievable (BAT) effluent limitation guidelines listed below:

Manufacturing Operation
Solution Crumb Rubber

Guideline
40 CFR 428, Subpart C
Sections 428.32 and 428.33

| PARAMETER(S) | MASS, LBS/DAY unless otherwise stated | | CONCENTRATION, MG/L unless otherwise stated | | MEASUREMENT FREQUENCY |
|--------------|---|------------------|--|------------------|--------------------------|
| | MONTHLY AVERAGE | DAILY MAXIMUM | MONTHLY AVERAGE | DAILY MAXIMUM | |
| Flow, MGD | Report | Report | --- | --- | Continuous |

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| PARAMETER(S) | MASS, LBS/DAY unless otherwise stated | | CONCENTRATION, MG/L unless otherwise stated | | MEASUREMENT FREQUENCY |
|--|---|------------------|--|-------------------------|----------------------------------|
| | MONTHLY AVERAGE | DAILY MAXIMUM | MONTHLY AVERAGE | DAILY MAXIMUM | |
| pH Range Excursions No. of Events >60 minutes | --- | 0 (*1) | --- | --- | Continuous |
| pH Range Excursions Monthly Total Accumulated Time in Minutes | --- | 446 (*1) | --- | --- | Continuous |
| pH (Standard Units) | --- | --- | Report (*1) (Min) | Report (*1) (Max) | Continuous |
| BOD ₅ | 451 | 676 | --- | --- | 4/week |
| TSS | 848 | 1278 | --- | --- | 1/week |
| Oil & Grease | 209 | 313 | --- | --- | 1/week |
| COD | 2343 | 3515 | --- | --- | 3/week |
| Ammonia (as N) | 92.5 | 185 | --- | --- | 3/week |
| Temperature (°F) | --- | --- | 95 | 100 | Continuous |
| Total Copper | --- | 0.0968000 | --- | --- | 1/quarter |
| Total Mercury | --- | 0.000665 | --- | --- | 1/quarter |
| Biomonitoring (*2) | --- | --- | Report | Report | 1/quarter for both species |

(*1) The pH shall be within a range of 6.0 - 9.0 Standard Units at all times subject to the continuous monitoring pH range excursion provision in Part II, Paragraph H of the draft permit.

(*2) See Part IX.D.

Flow: Established in accordance with LAC 33:IX.2707.I.1.b and retained from the current LPDES permit. The monitoring frequency has also been retained.

pH: Established in accordance with LAC 33:IX.1113.C.1. and retained from the current LPDES permit. The monitoring frequency has also been retained.

BOD₅: Daily maximum and monthly average limitations initially established in the April 1, 1999, LPDES permit have been retained from the current LPDES permit. This parameter must be maintained at the loadings used in the April 1, 1999, LPDES permit due to the Bayou D'Inde Dissolved Oxygen TMDL (see site-specific considerations for calculation of limitations). The monitoring frequency has been increased to 4/week.

TSS and Oil & Grease: Daily maximum and monthly average limitations have been established in accordance with 40 CFR 428, Subpart C (Section 428.32) using a production rate of 1,304,000 lbs/day presented in the April 29, 2011, application addendum (see site-specific considerations for calculation of limitations). The monitoring frequencies have been reduced from 3/week to 1/week based on BPJ.

COD and Ammonia (as N): Daily maximum and monthly average limitations initially established in the April 1, 1999, LPDES permit have been retained from the current LPDES permit. This parameter must be maintained at the loadings used in the April 1, 1999, LPDES permit due to the Bayou D'Inde Dissolved Oxygen TMDL (see site-specific considerations for calculation of limitations). The monitoring frequency has also been retained.

Temperature: Daily maximum and monthly average limitations initially established in the August 27, 1978, NPDES permit have been retained from the current LPDES permit. The monitoring frequency has also been retained.

Total Copper and Total Mercury: Wasteload allocations were originally established in the *Upper Calcasieu Estuary TMDL*, finalized on June 13, 2002. The wasteload allocations implemented into the July 1, 2006, LPDES permit have been retained. The monitoring frequencies have also been retained.

Site-Specific Consideration(s)

LDEQ determined, using its best professional knowledge, that based on the low volume of the sanitary wastewater contribution, the discharge will not exceed water quality standards for fecal coliform, therefore, a fecal coliform limit was not included as a parameter at Outfall 001.

The permittee may choose to use Clean Techniques for monitoring Total Copper and Total Mercury, however, use of this technique is optional. Clean Techniques refers to clean sample collection and handling outlined in EPA's Method 1669: Sampling Ambient Water for Determination of Trace Metals at EPA Water Quality Criteria Levels. This method was developed by EPA to specifically address the state's needs to measure toxic metals at water quality criteria levels when such measurements are necessary to protect designated uses in state water quality standards. This new procedure attempts to address all aspects of contamination associated with field sampling protocols, equipment, glassware, sample handling, and analytical laboratory methods. The technique is designed to monitor very low concentrations of trace metals and eliminate outside interference.

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Calculation of Limitations:

BPT/BAT Effluent Guidelines
 (lbs/1000 lbs of product)

Subpart C - Solution Crumb Rubber Subcategory:

Production (Klbs/day): 1,304.000

| | <u>Daily Average</u> | <u>Daily Maximum</u> |
|------------------|----------------------|----------------------|
| BOD ₅ | 0.40 | 0.60 |
| COD | 2.08 | 3.12 |
| TSS | 0.65 | 0.98 |
| Oil & Grease | 0.16 | 0.24 |
| pH (s.u.) | 6.0 | 9.0 |

The following equations were used to determine limitations:

MONTHLY AVERAGE - SOLUTION CRUMB RUBBER

Production Rate x Daily Average Value from Guidelines = Monthly Average

| Parameter | Production Rate (Klbs/day) | Daily Average From Guidelines (lbs/1000 lbs) | Monthly Average As Calculated from Technology Limits (lbs/day) | Proposed Monthly Average Limitation (lbs/day) |
|------------------|----------------------------|--|--|---|
| FLOW | --- | --- | --- | Report |
| TSS | 1,304 | 0.65 | 848 | 848 |
| Oil & Grease | 1,304 | 0.16 | 209 | 209 |
| COD | 1,304 | 2.08 | 2,712 | 2,343 |
| BOD ₅ | 1,304 | 0.40 | 522 | 451 |
| pH (s.u.) | --- | --- | --- | 6.0 |

DAILY MAXIMUM - SOLUTION CRUMB RUBBER

Production Rate x Daily Maximum Value from Guidelines = Daily Maximum

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| Parameter | Production Rate (Klbs/day) | Daily Maximum From Guidelines (lbs/1000 lbs) | Daily Maximum As Calculated from Technology Limits (lbs/day) | Proposed Daily Maximum Limitation (lbs/day) |
|------------------|----------------------------|--|--|---|
| FLOW | --- | --- | --- | Report |
| TSS | 1,304 | 0.98 | 1,278 | 1,278 |
| Oil & Grease | 1,304 | 0.24 | 313 | 313 |
| COD | 1,304 | 3.12 | 4,069 | 3,515 |
| BOD ₅ | 1,304 | 0.60 | 782 | 676 |
| pH (s.u.) | --- | --- | --- | 9.0 |

The proposed monthly average and daily maximum calculations for TSS and Oil & Grease were based off of the production rate of 1,304.000 K lbs/day from the application addendum dated April 29, 2011.

The proposed monthly average and daily maximum calculations for COD and BOD₅ were based off of the production rate of 1,126.667 K lbs/day from Firestone's LPDES permit issued, April 1, 1999. These parameters were maintained at the existing loading due to the Bayou D'Inde Dissolved Oxygen TMDL.

AMINE PRODUCTION

The April 29, 2011 application addendum indicates that amine production was increased from 382,000 lbs to 427,000 lbs of amine related product. The equations used to determine limitations for Ammonia Nitrogen are listed below.

MONTHLY AVERAGE

Long term Avg Flow x ammonia [] in discharge x 8.34 = Monthly Average

| Parameter | Long Term Avg Flow (MGD) | Ammonia [] (mg/L) | Factor | Monthly Average Calculated Limitation Based on Current Production (lbs/day) | Proposed Monthly Average Limitation (lbs/day) |
|------------------|--------------------------|--------------------|--------|---|---|
| Ammonia Nitrogen | 1.23 | 13 | 8.34 | 133 | 92.5 |

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DAILY MAXIMUM

Monthly Average x 2 = Daily Maximum

| Parameter | Monthly Average Based on Current Production (lbs/day) | Factor | | Daily Maximum Calculated Limitation Based on Current Production (lbs/day) | Proposed Daily Maximum Limitation (lbs/day) |
|------------------|---|--------|--|---|---|
| Ammonia Nitrogen | 133 | 2 | | 266 | 185 |

The Ammonia Nitrogen limitations were first formulated in the June 14, 1986, NPDES permit; the limits were 10 lbs/day for the daily average and 20 lbs/day for the daily maximum. The limits were adjusted in the September 19, 1991 NPDES permit to 52 lbs/day for the daily average and 104 lbs/day daily maximum. Due to increased production, Ammonia Nitrogen limits were adjusted using the same rationale as the September 19, 1991 NPDES permit. The revised limits established in the April 1, 1999 LPDES permit were 92.5 lbs/day daily average and 185 lbs/day daily maximum. These parameters were maintained at the existing loading due to the Bayou D'Inde Dissolved Oxygen TMDL.

2. Outfall 003 - the intermittent discharge of non-process area stormwater from the west side of the facility and the intermittent discharge of miscellaneous allowable non-stormwater discharges including but not limited to fire water, potable water, condensate, general facility washwaters (without soaps), irrigation water, eye wash and safety shower waters, and ground water/well water

Outfall 004 - the intermittent discharge of non-process area stormwater from the east side of the facility and the intermittent discharge of miscellaneous allowable non-stormwater discharges including but not limited to fire water, potable water, condensate, general facility washwaters (without soaps), irrigation water, eye wash and safety shower waters, and ground water/well water

| PARAMETER(S) | MASS, LBS/DAY unless otherwise stated | | CONCENTRATION, MG/L unless otherwise stated | | MEASUREMENT FREQUENCY |
|--------------|---|------------------|--|------------------|--------------------------|
| | MONTHLY AVERAGE | DAILY MAXIMUM | MONTHLY AVERAGE | DAILY MAXIMUM | |
| Flow, MGD | Report | Report | --- | --- | 1/quarter |
| TOC | --- | --- | --- | 50 | 1/quarter |

| PARAMETER(S) | MASS, LBS/DAY unless otherwise stated | | CONCENTRATION, MG/L unless otherwise stated | | MEASUREMENT FREQUENCY |
|-------------------|---|------------------|--|------------------|--------------------------|
| | MONTHLY AVERAGE | DAILY MAXIMUM | MONTHLY AVERAGE | DAILY MAXIMUM | |
| Oil & Grease | --- | --- | --- | 15 | 1/quarter |
| pH Standard Units | --- | --- | 6.0 (min) | 9.0 (max) | 1/quarter |

Flow: Established in accordance with LAC 33:IX.2707.I.1.b and retained from the current LPDES permit. The monitoring frequency has also been retained.

TOC and Oil & Grease: Daily maximum and monthly average limitations have been retained from the current LPDES permit and are consistent with this Office's guidance on stormwater, a letter dated 06/17/1987 from J. Dale Givens (LDEQ) to Myron Knudson (EPA Region 6) and the requirements and the requirements of Sector C of the Multi-Sector General Permit for Industrial Stormwater Discharges. The monitoring frequency has also been retained.

pH: Established in accordance with LAC 33:IX.1113.C.1 and retained from the current LPDES permit. The monitoring frequency has also been retained.

Other Requirements for all Stormwater Outfalls:

In accordance with LAC 33:IX.2707.I.3 and 4 [40 CFR 122.44(I) (3) and (4)], a Part II condition is proposed for applicability to all storm water discharges from the facility, either through permitted outfalls or through outfalls which are not listed in the permit or as sheet flow. For first time permit issuance, the Part II condition requires a Storm Water Pollution Prevention Plan (SWP3) within six (6) months of the effective date of the final permit. For renewal permit issuance, the Part II condition requires that the Storm Water Pollution Prevention Plan (SWP3) be reviewed and updated, if necessary, within six (6) months of the effective date of the final permit. If the permittee maintains other plans that contain duplicative information, those plans could be incorporated by reference to the SWP3. Examples of these type plans include, but are not limited to: Spill Prevention Control and Countermeasures Plan (SPCC), Best Management Plan (BMP), Response Plans, etc. The conditions will be found in the draft permit. Including Best Management Practice (BMP) controls in the form of a SWP3 is consistent with other LPDES and EPA permits regulating similar discharges of stormwater associated with industrial activity, as defined in LAC 33:IX.2511.B.14 [40 CFR 122.26(b) (14)].

C. WATER QUALITY-BASED EFFLUENT LIMITATIONS

In accordance with LAC 33:IX.2707.D.1/40 CFR § 122.44(d) (1), the existing (or potential) discharge (s) was evaluated in accordance with the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, October 26, 2010, to

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determine whether pollutants would be discharged "at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard." Calculations, results, and documentation are given in Appendix A.

The following pollutants received TMDL water quality based effluent limits:

| <u>POLLUTANT(S)</u> |
|---------------------|
| Total Copper |
| Total Mercury |

Minimum quantification levels (MQLs) for state water quality numerical standards-based effluent limitations are set at the values listed in the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, October 26, 2010. They are also listed in Part II of the permit.

TMDL Waterbodies

The discharges from Outfall 001 (treated process wastewater, process area stormwater, sanitary wastewater, and first-flush non-process area stormwater) and Outfalls 003 and 004 (non-process area stormwater runoff and miscellaneous allowable non-stormwater discharges including but not limited to fire water, potable water, condensate, general facility washwaters (without soaps), irrigation water, eye wash and safety shower waters, and ground water/well water) are to the Calcasieu River via Bayou D'Inde, Subsegment No. 030901. Subsegment 030901 is not listed on LDEQ's Final 2006 303(d) list as impaired. However, subsegment 030901 was previously listed as impaired for PCBs, priority organics (including tetrachloroethane, hexachlorobutadiene, and bromoform), organic enrichment/low DO, nutrients, and phosphorus, for which the below TMDLs have been developed. The Department of Environmental Quality reserves the right to impose more stringent discharge limitations and/or additional restrictions in the future to maintain the water quality integrity and the designated uses of the receiving water bodies based upon additional TMDLs and/or water quality studies. The DEQ also reserves the right to modify or revoke and reissue this permit based upon any changes to established TMDLs for this discharge, or to accommodate for pollutant trading provisions in approved TMDL watersheds as necessary to achieve compliance with water quality standards.

The following TMDLs have been established for subsegment 030901:

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*Total Maximum Daily Load for Toxics for the Calcasieu Estuary
(effective June 13, 2002)*

In the TMDL, wasteload allocations (WLAs) were assigned to this facility for copper and mercury. Limitations based on the WLAs for these parameters were established in the current LPDES permit and have been retained.

TMDLs for Dissolved Oxygen for the Calcasieu Estuary (effective July 1, 2002)

According to the TMDL, no wasteload allocations were assigned to this facility due to the receiving waterbody meeting the water quality criterion at existing loads. As a result of this, daily maximum and monthly average limitations for BOD₅, COD, and Ammonia (as N) initially established in the April 1, 1999, LPDES permit will be retained.

D. Biomonitoring Requirements

It has been determined that there may be pollutants present in the effluent which may have the potential to cause toxic conditions in the receiving stream. The State of Louisiana has established a narrative criteria which states, "toxic substances shall not be present in quantities that alone or in combination will be toxic to plant or animal life." The Office of Environmental Services requires the use of the most recent EPA biomonitoring protocols.

Whole effluent biomonitoring is the most direct measure of potential toxicity which incorporates both the effects of synergism of effluent components and receiving stream water quality characteristics. Biomonitoring of the effluent is, therefore, required as a condition of this permit to assess potential toxicity. The biomonitoring procedures stipulated as a condition of this permit for Outfall 001 are as follows:

TOXICITY TESTS

FREQUENCY

Chronic static renewal 7-day
survival and growth test
using Mysidopsis bahia
[Method 1007.0]

1/quarter

Chronic static renewal 7-day
larval survival and growth test
using inland silverside minnow
(Menidia beryllina) [Method 1006.0]

1/quarter

Toxicity tests shall be performed in accordance with protocols described in the latest revision of the "Short-Term Methods for

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Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms." The stipulated test species are appropriate to measure the toxicity of the effluent consistent with the requirements of the State water quality standards. The biomonitoring frequency has been established to reflect the likelihood of ambient toxicity and to provide data representative of the toxic potential of the facility's discharge in accordance with regulations promulgated at LAC 33:IX.2715/40 CFR Part 122.48.

Results of all dilutions as well as the associated chemical monitoring of pH, temperature, hardness, dissolved oxygen, conductivity, and salinity shall be documented in a full report according to the test method publication mentioned in the previous paragraph. The permittee shall submit a copy of the first full report to the Office of Environmental Compliance. The full report and subsequent reports are to be retained for three (3) years following the provisions of Part III.C.3 of this permit. The permit requires the submission of certain toxicity testing information as an attachment to the Discharge Monitoring Report.

This permit may be reopened to require effluent limits, additional testing, and/or other appropriate actions to address toxicity if biomonitoring data show actual or potential ambient toxicity to be the result of the permittee's discharge to the receiving stream or water body. Modification or revocation of the permit is subject to the provisions of LAC 33:IX.3105/40 CFR 124.5. Accelerated or intensified toxicity testing may be required in accordance with Section 308 of the Clean Water Act.

Dilution Series

The permit requires five (5) dilutions in addition to the control (0% effluent) to be used in the toxicity tests. These additional effluent concentrations shall be 2.6%, 3.4%, 4.6%, 6.1%, and 8.1%. The low-flow effluent concentration (critical dilution) is defined as 6.1% effluent.

X. Compliance History/DMR Review:

A. Inspections:

The most recent inspection for this facility was performed on September 23, 2009 (EDMS Doc ID# 6149397). No areas of concern were noted.

B. Enforcement Actions (COs, NOVs, Warning Letters, etc.):

Air:

AE-CN-08-0292, issued December 22, 2008 (EDMS Doc ID#6216039)

AE-PP-10-00449, issued February 14, 2011 (EDMS Doc ID# 7831471)

RECEIVED DATE

- C. A DMR review of the monitoring reports covering the monitoring period of January 2007 through February 2011 revealed the following effluent excursions:

| <u>DATE</u> | <u>PARAMETER</u> | <u>OUTFALL</u> | <u>REPORTED VALUE</u> | | <u>PERMIT LIMITS</u> | |
|-------------|------------------|----------------|------------------------|----------------------|------------------------|----------------------|
| | | | <u>MONTHLY AVERAGE</u> | <u>DAILY MAXIMUM</u> | <u>MONTHLY AVERAGE</u> | <u>DAILY MAXIMUM</u> |
| 08/07 | Ammonia (as N) | 001 | --- | 227 lbs/day | --- | 185 lbs/day |
| 10/07 | Oil & Grease | 001 | --- | 358 lbs/day | --- | 312 lbs/day |
| 11/07 | BOD ₅ | 001 | 803 lbs/day | 1639 lbs/day | 451 lbs/day | 676 lbs/day |
| 12/07 | BOD ₅ | 001 | 576 lbs/day | 1077 lbs/day | 451 lbs/day | 676 lbs/day |
| 12/07 | TSS | 001 | --- | 1324 lbs/day | --- | 1272 lbs/day |
| 01/08 | BOD ₅ | 001 | 546 lbs/day | 1975 lbs/day | 451 lbs/day | 676 lbs/day |
| 01/08 | COD | 001 | --- | 3603 lbs/day | --- | 3515 lbs/day |
| 06/08 | pH | 004 | --- | 9.4 s.u. | --- | 9 s.u. |
| 09/09 | Total Mercury | 001 | --- | 0.001729 lbs/day | --- | 0.000665 lbs/day |
| 11/09 | BOD ₅ | 001 | --- | 847 lbs/day | --- | 676 lbs/day |
| 12/09 | BOD ₅ | 001 | 655 lbs/day | 1357 lbs/day | 451 lbs/day | 676 lbs/day |
| 12/09 | COD | 001 | --- | 3968 lbs/day | --- | 3515 lbs/day |
| 01/10 | BOD ₅ | 001 | --- | 998 lbs/day | --- | 676 lbs/day |
| 02/10 | BOD ₅ | 001 | --- | 705 lbs/day | --- | 676 lbs/day |
| 08/10 | BOD ₅ | 001 | --- | 1703 lbs/day | --- | 676 lbs/day |

~~CONFIDENTIAL DRAFT~~

| <u>DATE</u> | <u>PARAMETER</u> | <u>OUTFALL</u> | <u>REPORTED VALUE</u> | | <u>PERMIT LIMITS</u> | |
|-------------|------------------|----------------|------------------------|----------------------|------------------------|----------------------|
| | | | <u>MONTHLY AVERAGE</u> | <u>DAILY MAXIMUM</u> | <u>MONTHLY AVERAGE</u> | <u>DAILY MAXIMUM</u> |
| 08/10 | COD | 001 | --- | 3847 lbs/day | --- | 3515 lbs/day |

D. Company Compliance History -

There are no other facilities in Louisiana owned by Firestone Polymers, LLC.

E. Permit Actions Taken:

Referral to Enforcement

Based on the above history, this facility was referred to the Enforcement Division on April 18, 2011 for further review. Please note that this is a referral only.

Please be aware that the Department has the authority to reduce monitoring frequencies when a permittee demonstrates two or more consecutive years of permit compliance. Monitoring frequencies established in LPDES permits are based on a number of different factors, including but not limited to, the size of the discharge, the type of wastewater being discharged, the specific operations at the facility, past compliance history, similar facilities and best professional judgment of the reviewer. We encourage and invite each permittee to institute positive measures to ensure continued compliance with the LPDES permit, thereby qualifying for reduced monitoring frequencies upon permit reissuance. As a reminder, the Department will also consider an increase in monitoring frequency upon permit reissuance when the permittee demonstrates continued non-compliance.

XI. "IT" Questions - Applicant's Responses

This applicant is not required to submit "IT" Questions in accordance with La. R.S. 30:2018(A)

XII. Endangered Species:

The receiving waterbody, Subsegment 030901 of the Calcasieu Basin is not listed in Section II.2 of the Implementation Strategy as requiring consultation with the U.S. Fish and Wildlife Service (FWS). This strategy was submitted with a letter dated April 1, 2011 from Rieck (FWS) to Nolan (LDEQ). Therefore, in accordance with the Memorandum of Understanding between the LDEQ and the FWS, no further informal (Section 7, Endangered Species Act) consultation is required. The effluent limitations

CONFIDENTIAL DRAFT

established in the permit ensure protection of aquatic life and maintenance of the receiving water as aquatic habitat. Therefore, the issuance of the LPDES permit is not likely to have an adverse effect on any endangered or candidate species or the critical habitat.

XIII. Historic Sites:

The discharge is from an existing facility location, which does not include an expansion on undisturbed soils. Therefore, there should be no potential effect to sites or properties on or eligible for listing on the National Register of Historic Places, and in accordance with the "Memorandum of Understanding for the Protection of Historic Properties in Louisiana Regarding LPDES Permits" no consultation with the Louisiana State Historic Preservation Officer is required.

XIV. Tentative Determination:

On the basis of preliminary staff review, the Department of Environmental Quality has made a tentative determination to reissue a permit for the discharge described in the application.

XV. Variances:

No requests for variances have been received by this Office.

XVI. Public Notices:

Upon publication of the public notice, a public comment period shall begin on the date of publication and last for at least 30 days thereafter. During this period, any interested persons may submit written comments on the draft permit and may request a public hearing to clarify issues involved in the permit decision at this Office's address on the first page of the fact sheet. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing.

Public notice published in:

Local newspaper of general circulation

Office of Environmental Services Public Notice Mailing List

PRELIMINARY DRAFT

Appendix A

PRELIMINARY DRAFT

wqsmodn.wk4

Date: 05/03

Appendix A-1

Page 1

Developer: Bruce Fielding

Time: 07:32 AM

Software: Lotus 4.0

LA0003824, AI 1244

Revision date: 11/03/10

Water Quality Screen for Firestone Polymers, LLC

Input variables:

Receiving Water Characteristics:

Receiving Water Name= Bayou D'Inde

Critical flow (Qr) cfs= 34.4

Harm. mean/avg tidal cfs= 103.2

Drinking Water=1 HHNPCR=2

MW=1, BW=2, 0=n 1

Rec. Water Hardness= 400

Rec. Water TSS= 11.38

Fisch/Specific=1, Stream=0

Diffuser Ratio=

Effluent Characteristics:

Permittee= Firestone Polymers, LLC

Permit Number= LA0003824, AI 1244

Facility flow (Qef), MGD= 1.44

Outfall Number = 001

Eff. data, 2=lbs/day

QOL, 2=lbs/day 1

Effluent Hardness= N/A

Effluent TSS= N/A

WQBL ind. 0=y, 1=n

Acute/Chr. ratio 0=n, 1=y 0

Aquatic, acute only 1=y, 0=n

Page Numbering/Labeling

Appendix Appendix A-1

Page Numbers 1=y, 0=n 1

Input Page # 1=y, 0=n 1

Fischer/Site Specific inputs:

Pipe=1, Canal=2, Specific=3

Pipe width, feet

ZID plume dist., feet

MZ plume dist., feet

HHnc plume dist., feet

HHc plume dist., feet

Fischer/site specific dilutions:

F/specific ZID Dilution = ---

F/specific MZ Dilution = ---

F/specific HHnc Dilution= ---

F/specific HHc Dilution= ---

Dilution:

ZID Fs = 0.1

MZ Fs = 1

Critical Qr (MGD)=22.23272

Harm. Mean (MGD)= 66.69816

ZID Dilution = 0.393091

MZ Dilution = 0.06083

HHnc Dilution= 0.021134

HHc Dilution= 0.021134

ZID Upstream = 1.543939

MZ Upstream = 15.43939

MZhhnc Upstream= 15.43939

MZhhnc Upstream= 46.31817

ZID Hardness= ---

MZ Hardness= ---

ZID TSS= ---

MZ TSS= ---

Multipliers:

WLAA --> LTAA 0.32

WLAC --> LTAC 0.53

LTA a,c-->WQBL avg 1.31

LTA a,c-->WQBL max 3.11

LTA h --> WQBL max 2.38

WQBL-limit/report 2.13

WLA Fraction 1

WQBL Fraction 1

Conversions:

ug/L-->lbs/day Qef 0.01201

ug/L-->lbs/day Qeo 0

ug/L-->lbs/day Qr 0.286896

lbs/day-->ug/L Qeo83.26672

lbs/day-->ug/L Qef83.26672

diss-->tot 1=y0=n 1

Cu diss-->tot1=y0=n 1

cfs-->MGD 0.6463

Receiving Stream:

Default Hardness= 25

Default TSS= 10

99 Crit., 1=y, 0=n 1

Old MQL=1, New=0 0

Toxicity Dilution Series:

Biomonitoring dilution: 0.06083

Dilution Series Factor: 0.75

Percent Effluent

Dilution No. 1 8.111%

Dilution No. 2 6.0830%

Dilution No. 3 4.5622%

Dilution No. 4 3.4217%

Dilution No. 5 2.5662%

Partition Coefficients; Dissolved-->Total

METALS MW

Total Arsenic 1

Total Cadmium 1

Chromium III 1

Chromium VI 1

Total Copper 1.143126

Total Lead 2.653565

Total Mercury 1

Total Nickel 1

Total Zinc 1.736119

Aquatic Life, Dissolved

Metal Criteria, ug/L

METALS ACUTE CHRONIC

Arsenic 69 36

Cadmium 45.34628 9.94

Chromium III 515 103

Chromium VI 1092.3 49.65

Copper 3.6271 3.6271

Lead 209.22 8.0835

Mercury 1.7 0.025

Nickel 74.25 8.217

Zinc 89.87 81.356

Site Specific Multiplier Values:

CV = ---

N = ---

WLAA --> LTAA ---

WLAC --> LTAC ---

LTA a,c-->WQBL avg ---

LTA a,c-->WQBL max ---

LTA h --> WQBL max ---

PRELIMINARY DRAFT

Appendix A-1

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Firestone Polymers, LLC

LA0003824, AI 1244

| (*1) | (*2) | (*3) | (*4) | (*5) | (*6) | (*7) | (*8) | (*9) | (*10) | (*11) |
|-------------------------|---------------------|-------|--------------------|-------------------|--------------------|----------|----------|----------|------------|-----------|
| Toxic | CuEffluent Effluent | | MQLEffluent 95th % | | Numerical Criteria | | HH | | | |
| Parameters | Instream | /Tech | /Tech | 1=No 95% estimate | 0=95 % Non-Tech | Acute | Chronic | HHNDW | Carcinogen | Indicator |
| | Conc. | (Avg) | (Max) | ug/L | ug/L | MW | MW | ug/L | ug/L | "C" |
| | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | "C" |
| NONCONVENTIONAL | | | | | | | | | | |
| Total Phenols (4AAP) | | | | 5 | | 580 | 290 | 50 | | |
| 3-Chlorophenol | | | | 10 | | | | | | |
| 4-Chlorophenol | | | | 10 | | 535 | 268 | | | |
| 2,3-Dichlorophenol | | | | 10 | | | | | | |
| 2,5-Dichlorophenol | | | | 10 | | | | | | |
| 2,6-Dichlorophenol | | | | 10 | | | | | | |
| 3,4-Dichlorophenol | | | | 10 | | | | | | |
| 2,4-Dichlorophenoc- | | | | | | | | | | |
| acetic acid (2,4-D) | | | | --- | | | | | | |
| 2-(2,4,5-Trichlorophen- | | | | | | | | | | |
| oxy) propionic acid | | | | | | | | | | |
| (2,4,5-TP, Silvex) | | | | --- | | | | | | |
| METALS AND CYANIDE | | | | | | | | | | |
| Total Arsenic | | | | 5 | | 69 | 36 | | | |
| Total Cadmium | | | | 1 | | 45.34628 | 9.94 | | | |
| Chromium III | | | | 10 | | 515 | 103 | | | |
| Chromium VI | | | | 10 | | 1092.3 | 49.65 | | | |
| Total Copper [*1] | | | | 3 | | 4.146234 | 4.146234 | | | |
| Total Lead | | | | 2 | | 555.1789 | 21.45009 | | | |
| Total Mercury [*1] | | | | 0.005 | | 1.7 | 0.025 | | | |
| Total Nickel | | | | 5 | | 74.25 | 8.217 | | | |
| Total Zinc | | | | 20 | | 156.0251 | 141.2437 | | | |
| Total Cyanide | | | | 10 | | 1 | | 12844 | | |
| DIOXIN | | | | | | | | | | |
| 2,3,7,8 TCDD; dioxin | | | | 0.00001 | | | | 7.2E-007 | | C |
| VOLATILE COMPOUNDS | | | | | | | | | | |
| Benzene | | | | 10 | | 2700 | 1350 | 12.5 | | C |
| Bromoform | | | | 10 | | 1790 | 895 | 34.7 | | C |
| Bromodichloromethane | | | | 10 | | | | 3.3 | | C |
| Carbon Tetrachloride | | | | 2 | | 15000 | 7500 | 1.2 | | C |
| Chloroform | | | | 10 | | 8150 | 4075 | 70 | | C |
| Dibromochloromethane | | | | 10 | | | | 5.08 | | C |
| 1,2-Dichloroethane | | | | 10 | | 11300 | 5650 | 6.8 | | C |
| 1,1-Dichloroethylene | | | | 10 | | 22400 | 11200 | 0.58 | | C |
| 1,3-Dichloropropylene | | | | 10 | | 79 | 39.5 | 162.79 | | |
| Ethylbenzene | | | | 10 | | 8760 | 4380 | 8100 | | |
| Methyl Chloride | | | | 50 | | 27000 | 13500 | | | |
| Methylene Chloride | | | | 20 | | 25600 | 12800 | 87 | | C |
| 1,1,2,2-Tetrachloro- | | | | | | | | | | |
| ethane | | | | 10 | | 902 | 451 | 1.8 | | C |

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Firestone Polymers, LLC
LA0003824, AI 1244

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| (*1) | (*12) | (*13) | (*14) | (*15) | (*16) | (*17) | (*18) | (*19) | (*20) | (*21) | (*22) | (*23) |
|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-------|
| Toxic | WLAa | WLAc | WLAh | LTAA | LTAc | LTah | Limiting | WQBL | WQBL | WQBL | WQBL | Need |
| Parameters | Acute | Chronic | HHNDW | Acute | Chronic | HHNDW | A,C,HH | Avg | Max | Avg | Max | WQBL? |
| | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | lbs/day | lbs/day | |
| NONCONVENTIONAL | | | | | | | | | | | | |
| Total Phenols (4AAP) | 1475.485 | 4767.423 | 2365.908 | 472.1551 | 2526.734 | 2365.908 | 472.1551 | 618.5231 | 1468.402 | 7.428215 | 17.63492 | no |
| 3-Chlorophenol | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | no |
| 4-Chlorophenol | 1361.007 | 4405.756 | --- | 435.5223 | 2335.051 | --- | 435.5223 | 570.5343 | 1354.474 | 6.851888 | 16.2667 | no |
| 2,3-Dichlorophenol | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | no |
| 2,5-Dichlorophenol | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | no |
| 2,6-Dichlorophenol | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | no |
| 3,4-Dichlorophenol | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | no |
| 2,4-Dichlorophenocetic acid (2,4-D) | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | no |
| 2-(2,4,5-Trichlorophenoxy) propionic acid (2,4,5-TP, Silvex) | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | no |
| METALS AND CYANIDE | | | | | | | | | | | | |
| Total Arsenic | 175.5318 | 591.818 | --- | 56.17017 | 313.6635 | --- | 56.17017 | 73.58292 | 174.6892 | 0.883701 | 2.097948 | no |
| Total Cadmium | 115.3582 | 163.4075 | --- | 36.91461 | 86.60599 | --- | 36.91461 | 48.35814 | 114.8044 | 0.580762 | 1.378755 | no |
| Chromium III | 1310.129 | 1693.257 | --- | 419.2411 | 897.4262 | --- | 419.2411 | 549.2059 | 1303.84 | 6.595743 | 15.6586 | no |
| Chromium VI | 2778.744 | 816.2157 | --- | 889.1982 | 432.5943 | --- | 432.5943 | 566.6985 | 1345.368 | 6.805823 | 16.15733 | no |
| Total Copper [*1] | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.0968 | 0.0968 | yes |
| Total Lead | 1412.341 | 352.6264 | --- | 451.9492 | 186.892 | --- | 186.892 | 244.8285 | 581.2342 | 2.940293 | 6.98039 | no |
| Total Mercury [*1] | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.000665 | 0.000665 | yes |
| Total Nickel | 188.8875 | 135.0825 | --- | 60.44399 | 71.5937 | --- | 60.44399 | 79.18162 | 187.9808 | 0.95094 | 2.257574 | no |
| Total Zinc | 396.9182 | 2321.961 | --- | 127.0138 | 1230.639 | --- | 127.0138 | 166.3881 | 395.013 | 1.998255 | 4.743948 | no |
| Total Cyanide | 2.543939 | --- | 607754.5 | 0.81406 | --- | 607754.5 | 0.81406 | 1.066419 | 2.531728 | 0.012807 | 0.030405 | no |
| DIOXIN | | | | | | | | | | | | |
| 2,3,7,8 TCDD; dioxin | --- | --- | 0.000034 | --- | --- | 0.000034 | 0.000034 | 0.000034 | 0.000081 | 4.1E-007 | 9.7E-007 | no |
| VOLATILE COMPOUNDS | | | | | | | | | | | | |
| Benzene | 6868.635 | 22193.18 | 591.4771 | 2197.963 | 11762.38 | 591.4771 | 591.4771 | 591.4771 | 1407.715 | 7.103403 | 16.9061 | no |
| Bromoform | 4553.651 | 14713.25 | 1641.94 | 1457.168 | 7798.024 | 1641.94 | 1457.168 | 1908.89 | 4531.793 | 22.92501 | 54.42502 | no |
| Bromodichloromethane | --- | --- | 156.15 | --- | --- | 156.15 | 156.15 | 156.15 | 371.6369 | 1.875298 | 4.46321 | no |
| Carbon Tetrachloride | 38159.08 | 123295.4 | 56.7818 | 12210.91 | 65346.57 | 56.7818 | 56.7818 | 56.7818 | 135.1407 | 0.681927 | 1.622986 | no |
| Chloroform | 20733.1 | 66990.51 | 3312.272 | 6634.593 | 35504.97 | 3312.272 | 3312.272 | 3312.272 | 7883.207 | 39.77906 | 94.67416 | no |
| Dibromochloromethane | --- | --- | 240.3763 | --- | --- | 240.3763 | 240.3763 | 240.3763 | 572.0956 | 2.886823 | 6.870639 | no |
| 1,2-Dichloroethane | 28746.51 | 92882.55 | 321.7635 | 9198.883 | 49227.75 | 321.7635 | 321.7635 | 321.7635 | 765.7972 | 3.864251 | 9.196918 | no |
| 1,1-Dichloroethylene | 56984.23 | 184121.2 | 27.44454 | 18234.95 | 97584.21 | 27.44454 | 27.44454 | 27.44454 | 65.318 | 0.329598 | 0.784443 | no |
| 1,3-Dichloropropylene | 200.9712 | 649.3559 | 7702.924 | 64.31078 | 344.1586 | 7702.924 | 64.31078 | 84.24712 | 200.0065 | 1.011774 | 2.401998 | no |
| Ethylbenzene | 22284.9 | 72004.52 | 383277.2 | 7131.169 | 38162.4 | 383277.2 | 7131.169 | 9341.832 | 22177.94 | 112.1917 | 266.3482 | no |
| Methyl Chloride | 68686.35 | 221931.8 | --- | 21979.63 | 117623.8 | --- | 21979.63 | 28793.32 | 68356.66 | 345.7962 | 820.9361 | no |
| Methylene Chloride | 65124.84 | 210424.2 | 4116.681 | 20839.95 | 111524.8 | 4116.681 | 4116.681 | 4116.681 | 9797.7 | 49.43969 | 117.6665 | no |
| 1,1,2,2-Tetrachloroethane | 2294.633 | 7414.164 | 85.1727 | 734.2825 | 3929.507 | 85.1727 | 85.1727 | 85.1727 | 202.711 | 1.02289 | 2.434478 | no |

PRELIMINARY DRAFT

Appendix A-1

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Firestone Polymers, LLC

LA0003824, AI 1244

| (*1) | (*2) | (*3) | (*4) | (*5) | (*6) | (*7) | (*8) | (*9) | (*10) | (*11) |
|-----------------------------|---------------------|-------|-------|-------------------|----------|--------------------|---------|---------|------------|-------|
| Toxic | CuEffluent Effluent | | | MLEffluent 95th % | | Numerical Criteria | | | HH | |
| Parameters | Instream | /Tech | /Tech | 1=No 95% | estimate | Acute | Chronic | HHNDW | Carcinogen | |
| | Conc. | (Avg) | (Max) | 0=95 % | Non-Tech | MW | MW | | Indicator | |
| | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | "C" | |
| VOLATILE COMPOUNDS (cont'd) | | | | | | | | | | |
| Tetrachloroethylene | | | | 10 | | 1020 | 510 | 2.5 | C | |
| Toluene | | | | 10 | | 950 | 475 | 46200 | | |
| 1,1,1-Trichloroethane | | | | 10 | | 3120 | 1560 | | | |
| 1,1,2-Trichloroethane | | | | 10 | | | | 6.9 | C | |
| Trichloroethylene | | | | 10 | | 200 | 100 | 21 | C | |
| Vinyl Chloride | | | | 10 | | | | 35.8 | C | |
| ACID COMPOUNDS | | | | | | | | | | |
| 2-Chlorophenol | | | | 10 | | | | 126.4 | | |
| 2,4-Dichlorophenol | | | | 10 | | | | 232.6 | | |
| BASE NEUTRAL COMPOUNDS | | | | | | | | | | |
| Benzidine | | | | 50 | | | | 0.00017 | C | |
| Hexachlorobenzene | | | | 5 | | | | 0.00025 | C | |
| Hexachlorabutadiene | | | | 10 | | 1.6 | 0.32 | 0.11 | C | |
| PESTICIDES | | | | | | | | | | |
| Aldrin | | | | 0.01 | | 1.3 | | 0.0004 | C | |
| Hexachlorocyclohexane | | | | | | | | | | |
| (gamma BHC, Lindane) | | | | 0.05 | | 0.16 | | 0.2 | C | |
| Chlordane | | | | 0.2 | | 0.09 | 0.004 | 0.00019 | C | |
| 4,4'-DDT | | | | 0.02 | | 0.13 | 0.001 | 0.00019 | C | |
| 4,4'-DDE | | | | 0.1 | | 0.7 | 0.14 | 0.00019 | C | |
| 4,4'-DDD | | | | 0.1 | | 1.25 | 0.25 | 0.00027 | C | |
| Dieldrin | | | | 0.02 | | 0.71 | 0.0019 | 0.00005 | C | |
| Endosulfan | | | | 0.01 | | 0.034 | 0.0087 | 0.64 | | |
| Endrin | | | | 0.1 | | 0.037 | 0.0023 | 0.26 | | |
| Heptachlor | | | | 0.01 | | 0.053 | 0.0036 | 0.00007 | C | |
| | | | | 0.2 | | 10 | 0.03 | | | |
| Toxaphene | | | | 0.3 | | 0.21 | 0.0002 | 0.00024 | C | |
| Other Parameters: | | | | | | | | | | |
| Fecal Col. (col/100ml) | | | | | | | | | | |
| Chlorine | | | | 33 | | 13 | 7.5 | | | |
| Ammonia | | | | | | | | | | |
| Chlorides | | | | | | | | | | |
| Sulfates | | | | | | | | | | |
| TDS | | | | | | | | | | |

[*1] TMDL Limitation

APPENDIX A-2 LA0003824, AI No. 1244

Documentation and Explanation of Water Quality Screen and Associated Lotus Spreadsheet

Each reference column is marked by a set of parentheses enclosing a number and asterisk, for example (*1) or (*19). These columns represent inputs, existing data sets, calculation points, and results for determining Water Quality Based Limits for an effluent of concern. The following represents a summary of information used in calculating the water quality screen:

Receiving Water Characteristics:

Receiving Water: Calcasieu River via Bayou D'Inde
Critical Flow, Qrc (cfs): 34.4
Harmonic Mean Flow, Qrh (cfs): 103.2
Segment No.: 030901
Receiving Stream Hardness (mg/L): 400
Receiving Stream TSS (mg/L): 11.38
MZ Stream Factor, Fs: 1
Plume distance, Pf: N/A

Effluent Characteristics:

Company: Firestone Polymers, LLC
Facility flow, Qe (MGD): 1.44
Effluent Hardness: N/A
Effluent TSS: N/A
Pipe/canal width, Pw: N/A
Permit Number: LA0003824

Variable Definition:

Qrc, critical flow of receiving stream, cfs
Qrh, harmonic mean flow of the receiving stream, cfs
Pf = Allowable plume distance in feet, specified in LAC 33.IX.1115.D
Pw = Pipe width or canal width in feet
Qe, total facility flow, MGD
Fs, stream factor from LAC.IX.33.11 (1 for harmonic mean flow)
Cu, ambient concentration, ug/L
Cr, numerical criteria from LAC.IX.1113, Table 1
WLA, wasteload allocation
LTA, long term average calculations
WQBL, effluent water quality based limit
ZID, Zone of Initial Dilution in % effluent
MZ, Mixing Zone in % effluent

Formulas used in aquatic life water quality screen (dilution type WLA):

Streams:

$$\text{Dilution Factor} = \frac{Q_e}{(Q_{rc} \times 0.6463 \times F_s + Q_e)}$$

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$$\text{WLA a,c,h} = \frac{\text{Cr}}{\text{Dilution Factor}} - \frac{(\text{Fs} \times \text{Qrc} \times 0.6463 \times \text{Cu})}{\text{Qe}}$$

Static water bodies (in the absence of a site specific dilution):

Discharge from a pipe:

Discharge from a canal:

$$\begin{array}{l} \text{Critical} \\ \text{Dilution} = \frac{(2.8) \text{ Pw } \pi^{1/2}}{\text{Pf}} \end{array}$$

$$\begin{array}{l} \text{Critical} \\ \text{Dilution} = \frac{(2.38) (\text{Pw}^{1/2})}{(\text{Pf})^{1/2}} \end{array}$$

$$\text{WLA} = \frac{(\text{Cr}-\text{Cu}) \text{ Pf}}{(2.8) \text{ Pw } \pi^{1/2}}$$

$$\text{WLA} = \frac{(\text{Cr}-\text{Cu}) \text{ Pf}^{1/2}}{2.38 \text{ Pw}^{1/2}}$$

Formulas used in human health water quality screen, human health non-carcinogens (dilution type WLA):

Streams:

$$\text{Dilution Factor} = \frac{\text{Qe}}{(\text{Qrc} \times 0.6463 + \text{Qe})}$$

$$\text{WLA a,c,h} = \frac{\text{Cr}}{\text{Dilution Factor}} - \frac{(\text{Qrc} \times 0.6463 \times \text{Cu})}{\text{Qe}}$$

Formulas used in human health water quality screen, human health carcinogens (dilution type WLA):

$$\text{Dilution Factor} = \frac{\text{Qe}}{(\text{Qrh} \times 0.6463 + \text{Qe})}$$

$$\text{WLA a,c,h} = \frac{\text{Cr}}{\text{Dilution Factor}} - \frac{(\text{Qrh} \times 0.6463 \times \text{Cu})}{\text{Qe}}$$

Static water bodies in the absence of a site specific dilution (human health carcinogens and human health non-carcinogens):

Discharge from a pipe:

Discharge from a canal:

$$\begin{array}{l} \text{Critical} \\ \text{Dilution} = \frac{(2.8) \text{ Pw } \pi^{1/2}}{\text{Pf}} \end{array}$$

$$\begin{array}{l} \text{Critical} \\ \text{Dilution} = \frac{(2.38) (\text{Pw}^{1/2})}{(\text{Pf})^{1/2}} \end{array}$$

$$\text{WLA} = \frac{(\text{Cr}-\text{Cu}) \text{ Pf}^*}{(2.8) \text{ Pw } \pi^{1/2}}$$

$$\text{WLA} = \frac{(\text{Cr}-\text{Cu}) \text{ Pf}^{1/2*}}{2.38 \text{ Pw}^{1/2}}$$

* Pf is set equal to the mixing zone distance specified in LAC 33:IX.1115 for the static water body type, i.e., lake, estuary, Gulf of Mexico, etc.

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If a site specific dilution is used, WLA are calculated by subtracting Cu from Cr and dividing by the site specific dilution for human health and aquatic life criteria.

$$WLA = \frac{(Cr - Cu)}{\text{site specific dilution}}$$

Longterm Average Calculations:

$$LTAA = WLAa \times 0.32$$

$$LTAc = WLAc \times 0.53$$

$$LTAh = WLAh$$

WQBL Calculations:

Select most limiting LTA to calculate daily max and monthly avg WQBL

If aquatic life LTA is more limiting:

$$\text{Daily Maximum} = \text{Min}(LTAA, LTAc) \times 3.11$$

$$\text{Monthly Average} = \text{Min}(LTAc, LTAh) \times 1.31$$

If human health LTA is more limiting:

$$\text{Daily Maximum} = LTAh \times 2.38$$

$$\text{Monthly Average} = LTAh$$

Mass Balance Formulas:

$$\text{mass (lbs/day)}: (\text{ug/L}) \times 1/1000 \times (\text{flow, MGD}) \times 8.34 = \text{lbs/day}$$

$$\text{concentration(ug/L)}: \frac{\text{lbs/day}}{(\text{flow, MGD}) \times 8.34 \times 1/1000} = \text{ug/L}$$

The following is an explanation of the references in the spreadsheet.

- (*1) Parameter being screened.
- (*2) Instream concentration for the parameter being screened in ug/L. In the absence of accurate supporting data, the instream concentration is assumed to be zero (0).
- (*3) Monthly average effluent or technology value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.
- (*4) Daily maximum technology value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.
- (*5) Minimum analytical Quantification Levels (MQL's). Established in a letter dated January 27, 1994 from Wren Stenger of EPA Region 6 to Kilren Vidrine of LDEQ and from the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". The applicant must test for the parameter at a level at least as sensitive as the specified MQL. If this is not done, the MQL becomes the application value for screening purposes if the pollutant is suspected to be present

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- on-site and/or in the waste stream. Units are in ug/l or lbs/day depending on the units of the effluent data.
- (*6) States whether effluent data is based on 95th percentile estimation. A "1" indicates that a 95th percentile approximation is being used, a "0" indicates that no 95th percentile approximation is being used.
 - (*7) 95th percentile approximation multiplier (2.13). The constant, 2.13, was established in memorandum of understanding dated October 8, 1991 from Jack Ferguson of Region 6 to Jesse Chang of LDEQ and included in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". This value is screened against effluent Water Quality Based Limits established in columns (*18) - (*21). Units are in ug/l or lbs/day depending on the units of the measured effluent data.
 - (*8) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, acute criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations. Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used, however, a flow weighted TSS may be determined in site-specific situations.

Hardness Dependent Criteria:

| <u>Metal</u> | <u>Formula</u> |
|--------------|--|
| Cadmium | $e^{(1.1280 [\ln(\text{hardness})] - 1.6774)}$ |
| Chromium III | $e^{(0.8190 [\ln(\text{hardness})] + 3.6880)}$ |
| Copper | $e^{(0.9422 [\ln(\text{hardness})] - 1.3884)}$ |
| Lead | $e^{(1.2730 [\ln(\text{hardness})] - 1.4600)}$ |
| Nickel | $e^{(0.8460 [\ln(\text{hardness})] + 3.3612)}$ |
| Zinc | $e^{(0.8473 [\ln(\text{hardness})] + 0.8604)}$ |

Dissolved to Total Metal Multipliers for Freshwater Streams (TSS dependent):

| <u>Metal</u> | <u>Multiplier</u> |
|--------------|--|
| Arsenic | $1 + 0.48 \times \text{TSS}^{-0.73} \times \text{TSS}$ |
| Cadmium | $1 + 4.00 \times \text{TSS}^{-1.13} \times \text{TSS}$ |
| Chromium III | $1 + 3.36 \times \text{TSS}^{-0.93} \times \text{TSS}$ |
| Copper | $1 + 1.04 \times \text{TSS}^{-0.74} \times \text{TSS}$ |
| Lead | $1 + 2.80 \times \text{TSS}^{-0.80} \times \text{TSS}$ |
| Mercury | $1 + 2.90 \times \text{TSS}^{-1.14} \times \text{TSS}$ |
| Nickel | $1 + 0.49 \times \text{TSS}^{-0.57} \times \text{TSS}$ |
| Zinc | $1 + 1.25 \times \text{TSS}^{-0.70} \times \text{TSS}$ |

Dissolved to Total Metal Multipliers for Marine Environments (TSS dependent):

| <u>Metal</u> | <u>Multiplier</u> |
|--------------|-------------------|
|--------------|-------------------|

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| | |
|--------|--|
| Copper | $1 + (10^{4.86} \times \text{TSS}^{-0.72} \times \text{TSS}) \times 10^{-6}$ |
| Lead | $1 + (10^{6.06} \times \text{TSS}^{-0.85} \times \text{TSS}) \times 10^{-6}$ |
| Zinc | $1 + (10^{5.36} \times \text{TSS}^{-0.52} \times \text{TSS}) \times 10^{-6}$ |

If a metal does not have multiplier listed above, then the dissolved to total metal multiplier shall be 1.

- (*9) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, chronic criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations. Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used, however, a flow weighted TSS may be determined in site-specific situations.

Hardness dependent criteria:

| <u>Metal</u> | <u>Formula</u> |
|--------------|--|
| Cadmium | $e^{(0.7852 [\ln(\text{hardness})] - 3.4900)}$ |
| Chromium III | $e^{(0.8473 [\ln(\text{hardness})] + 0.7614)}$ |
| Copper | $e^{(0.8545 [\ln(\text{hardness})] - 1.3860)}$ |
| Lead | $e^{(1.2730 [\ln(\text{hardness})] - 4.7050)}$ |
| Nickel | $e^{(0.8460 [\ln(\text{hardness})] + 1.1645)}$ |
| Zinc | $e^{(0.8473 [\ln(\text{hardness})] + 0.7614)}$ |

Dissolved to total metal multiplier formulas are the same as (*8), acute numerical criteria for aquatic life protection.

- (*10) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, human health protection, drinking water supply (HHDW), non-drinking water supply criteria (HHNDW), or human health non-primary contact recreation (HHNPCR) (whichever is applicable). A DEQ and EPA approved Use Attainability Analysis is required before HHNPCR is used, e.g., Monte Sano Bayou. Units are specified.
- (*11) C if screened and carcinogenic. If a parameter is being screened and is carcinogenic a "C" will appear in this column.
- (*12) Wasteload Allocation for acute aquatic criteria (WLAA). Dilution type WLAA is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the acute aquatic numerical criteria for that parameter. Units are in ug/L.

Dilution WLAA formulas for streams:

$$\text{WLAA} = (\text{Cr}/\text{Dilution Factor}) - \frac{(\text{Fs} \times \text{Qrc} \times 0.6463 \times \text{Cu})}{\text{Qe}}$$

Dilution WLAA formulas for static water bodies:

$$\text{WLAA} = (\text{Cr}-\text{Cu})/\text{Dilution Factor}$$

Cr represents aquatic acute numerical criteria from column (*8).

If Cu data is unavailable or inadequate, assume Cu=0.

If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

- (*13) Wasteload Allocation for chronic aquatic criteria (WLAc). Dilution type WLAc is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the chronic aquatic numerical criteria for that parameter. Units are in ug/L.

Dilution WLAc formula:

$$WLAc = (Cr/Dilution\ Factor) - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAc formulas for static water bodies:

$$WLAc = (Cr-Cu)/Dilution\ Factor)$$

Cr represents aquatic chronic numerical criteria from column (*9).

If Cu data is unavailable or inadequate, assume Cu=0.

If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

- (*14) Wasteload Allocation for human health criteria (WLAh). Dilution type WLAh is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the human health numerical criteria for that parameter. Units are in ug/L. Dilution

WLAh formula:

$$WLAh = (Cr/Dilution\ Factor) - \frac{(Fs \times Qrc, Qrh \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAh formulas for static water bodies:

$$WLAh = (Cr-Cu)/Dilution\ Factor)$$

Cr represents human health numerical criteria from column (*10).

If Cu data is unavailable or inadequate, assume Cu=0.

If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

- (*15) Long Term Average for aquatic numerical criteria (LTAA). WLAa numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.32. WLAa X 0.32 = LTAA.

If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

- (*16) Long Term Average for chronic numerical criteria (LTAc). WLAc numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.53. WLAc X 0.53 = LTAc.

If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

- (*17) Long Term Average for human health numerical criteria (LTAh). WLAh numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 1. WLAc X 1 = LTAh.

If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

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- (*18) Limiting Acute, Chronic or Human Health LTA's. The most limiting LTA is placed in this column. Units are consistent with the WLA calculation. If standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then the type of limit, Aquatic or Human Health (HH), is indicated.
- (*19) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 1.31 to determine the average WQBL ($LTA_{\text{limiting aquatic}} \times 1.31 = WQBL_{\text{monthly average}}$). If human health criteria was the most limiting criteria then $LTA_h = WQBL_{\text{monthly average}}$. If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then either the human health criteria or the chronic aquatic life criteria shall appear in this column depending on which is more limiting.
- (*20) End of pipe Water Quality Based Limit (WQBL) daily maximum in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 3.11 to determine the daily maximum WQBL ($LTA_{\text{limiting aquatic}} \times 3.11 = WQBL_{\text{daily max}}$). If human health criteria was the most limiting criteria then LTA_h is multiplied by 2.38 to determine the daily maximum WQBL ($LTA_{\text{limiting aquatic}} \times 2.38 = WQBL_{\text{daily max}}$). If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then either the human health criteria or the acute aquatic life criteria shall appear in this column depending on which is more limiting.
- (*21) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of mass, lbs/day. The mass limit is determined by using the mass balance equations above. $\text{Monthly average WQBL, ug/l/1000} \times \text{facility flow, MGD} \times 8.34 = \text{monthly average WQBL, lbs/day}$.
- (*22) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of mass, lbs/day. Mass limit is determined by using the mass balance equations above. $\text{Daily maximum WQBL, ug/l/1000} \times \text{facility flow, MGD} \times 8.34 = \text{daily maximum WQBL, lbs/day}$.
- (*23) Indicates whether the screened effluent value(s) need water quality based limits for the parameter of concern. A "yes" indicates that a water quality based limit is needed in the permit; a "no" indicates the reverse.

Appendix B

PRELIMINARY DRAFT

MEMORANDUM

TO: Christy Clark

FROM: Todd Franklin

DATE: January 27, 2011

RE: Stream Flow Characteristics for Bayou D'Inde, receiving waters for Firestone Polymers, LLC / Lake Charles Facility (LA0003824 / AI: 1244)

The discharge from Outfall 001 flows into Bayou D'Inde. Ambient data for hardness and TSS was taken from ambient monitoring station #0848 (Bayou D'Inde at the bridge on Highway 108, one mile south of I-10 exit #24, 5.4 miles west of Lake Charles, and 4.1 miles northeast of Carlyss). The following results were obtained:

| | | |
|---------------------------------|---|------------|
| Average hardness | = | 400 mg/l* |
| 15 th percentile TSS | = | 11.38 mg/l |

* The average hardness of the waterbody at the outfall was determined to be 924.6 mg/l. However, according to the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, Water Quality Management Plan, Volume 3, the maximum hardness shall be 400 mg/L used in hardness dependent metal criteria calculations in accordance with 40 CFR 131.36(c)(4)(i).

Based on previous determinations performed for this facility (See EDMS Document # 3427714), the critical flow (7Q10) for Bayou D'Inde at the discharge point was determined to be 34.4 cfs and the harmonic mean flow was determined to be 103.2 cfs. There does not appear to be any significant hydrological changes to the waterbody; therefore, these values should be used in permit limit calculations.

If you have additional questions or comments, please contact me at 2-3209.

Appendix C

**BIOMONITORING FREQUENCY RECOMMENDATION
AND RATIONALE FOR ADDITIONAL REQUIREMENTS**

Permit Number: **LA0003824**
Facility Name: **Firestone Polymers, LLC**
Previous Critical Biomonitoring Dilution: **7%**
Proposed Critical Biomonitoring Dilution: **6.1%**
Outfall Discharge Flow: **1.44 mgd**
Receiving stream 7Q10: **34.4 cfs**
Date of Review: **01/31/11; revised 03/10/11; 3/22/11**
Name of Reviewer: **Laura Thompson**

Recommended Frequency by Species for both Outfalls:

Menidia beryllina (Inland Silverside minnow): **Once / Quarter^{1,2}**
Mysidopsis bahia (Mysid shrimp): **Once / Quarter^{1,2}**

Recommended Dilution Series: **2.6%, 3.4%, 4.6%, 6.1%, & 8.1%**

Number of Tests Performed during previous 5 years by Species:

Menidia beryllina (Inland Silverside minnow): **19**
Mysidopsis bahia (Mysid shrimp): **17**

Number of Failed Tests during previous 5 years by Species:

Menidia beryllina (Inland Silverside minnow): **1 lethal, 1 sub-lethal**
Mysidopsis bahia (Mysid shrimp): **2 sub-lethal**

Failed Test Dates during previous 5 years by Species:

Menidia beryllina (Inland Silverside minnow): **Monitoring period of 1/1/07-3/31/07**
Mysidopsis bahia (Mysid shrimp): **Monitoring periods of: 1/1/07-3/31/07;
1/1/10-3/31/10**

Previous TRE Activities: **N/A – No previous TRE Activities**

¹ A Total Maximum Daily Load (TMDL) has been developed for this receiving stream, Bayou D'Inde, which recommends that all majors and significant minor discharges to Bayou D'Inde test effluents for chronic toxicity at least quarterly for the term of the permit to demonstrate that unmonitored pollutants or the combination of monitored and/or unmonitored pollutants are not causing instream toxicity.

² This facility shall have an established biomonitoring testing frequency of **once per quarter** for the term of the permit

Additional Requirements (including WET Limits) Rationale / Comments Concerning Permitting:

Firestone Polymers, LLC owns and operates a synthetic rubber manufacturing facility located in Sulphur, Calcasieu Parish, Louisiana. LPDES Permit LA0003824, effective July 1, 2006, contained marine chronic biomonitoring as an effluent characteristic of Outfall 001. The effluent series consisted of 3%, 4%, 5%, 7%, and 9% concentrations, with 7% being the defined critical biomonitoring dilution. The testing was to be performed once per quarter for the *Mysidopsis bahia* and the *Menidia beryllina*. Data on file indicate that the permittee has complied with the biomonitoring requirements contained in LA0003824, experiencing 1 lethal and 1 sub-lethal failure to the *Menidia beryllina* and 2 sub-lethal failures to the *Mysidopsis bahia* during the past five years.

This facility did experience lethal and sub-lethal biomonitoring test failures during the previous permit cycle. A reasonable potential statistical analysis did demonstrate that reasonable potential for future lethal and/or sub-lethal toxicity exists for Firestone Polymers, LLC. However, only 2 sub-lethal failures were experienced by the *Mysidopsis bahia*. One lethal and one sub-lethal failure were experienced by the *Menidia beryllina*. Both required retests for *Menidia beryllina* were performed and both passed. This gives the facility a 97% passing rate for lethality and a 92% passing rate for sub-lethality. LDEQ initiated the sub-lethal Reasonable Potential evaluations per agreement with EPA on April 16, 2008. The expiring Firestone permit was issued prior to this change and thus did not include sub-lethal provisions or permit conditions, such as required sub-lethal only retests upon failure, that would have allowed the permittee to aggressively pursue and address conditions associated with the failure. LPDES permits now contain all necessary permit conditions and requirements to address both lethal and sub-lethal failures such that Reasonable Potential analysis can begin at the point of the initial failure. No other toxicity was observed during the permit cycle. Based on analysis of all available information, LDEQ has determined that a WET limit is not warranted at this time. In order to generate a complete compliance record, the frequency reduction option will not be available under this reissued permit.

A Total Maximum Daily Load (TMDL) has been developed for this receiving stream, Bayou D'Inde, which recommends that all major and significant minor dischargers to Bayou D'Inde test effluents for chronic toxicity at least quarterly for the term of the permit to demonstrate that unmonitored pollutants or the combination of monitored and/or unmonitored pollutants are not causing instream toxicity.

Consistent with the Bayou D'Inde TMDL, it is recommended that marine chronic biomonitoring continue to be an effluent characteristic of Outfall 001 (continuous discharge of 1.44 mgd of treated process wastewater, process area stormwater, sanitary wastewater, and first-flush non-process area stormwater) in LA0003824. The effluent dilution series shall be 2.6%, 3.4%, 4.6%, 6.1%, & 8.1% concentrations, with 6.1% being defined as the critical biomonitoring dilution. The biomonitoring frequency shall be once per quarter for *Menidia beryllina* and *Mysidopsis bahia* for the term of the permit.

This recommendation is in accordance with the LDEQ/OES Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, Water Quality Management Plan Volume 3. Version 8 (October 26, 2010), and the Best Professional Judgment (BPJ) of the reviewer.